

Interesting circuit ideas from readers and technical literature. While this material has been checked as far as possible for feasibility, the circuits have not been built and tested by us. As a consequence, we cannot accept responsibility, enter into correspondence or provide constructional details.

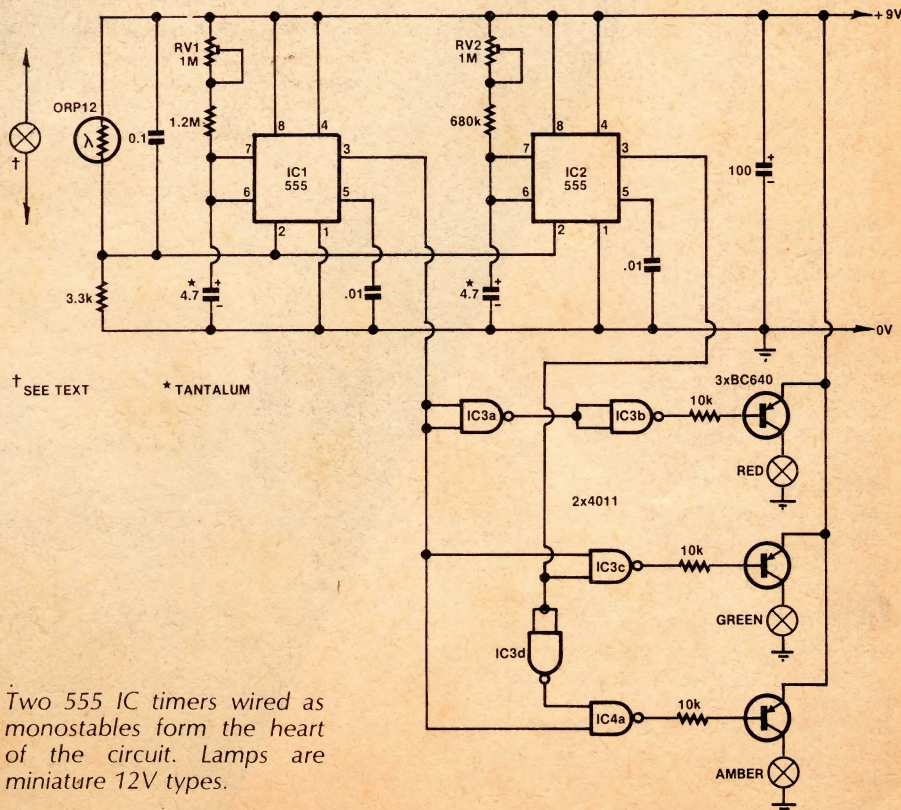
Using a single light beam, this circuit will switch three miniature 12V lamps, as used in model trackside signals.

The signals are placed about 40cm or more past the light beam. As the train passes between the LDR and lamp, the signals change from red to green. After a delay of several seconds, the signals turn amber, then back to red again. In the prototype, the green lamp remained on for about eight seconds and the amber lamp for approximately four seconds. While this may not seem realistic (the train never has to stop for a red light), it is better than a static display.

The circuit is based on a pair of 555 timers, wired as monostable multivibrators. When light falling on the LDR is interrupted, the voltage on pin 2 drops below one-third of the supply potential. The timing capacitor then charges up towards 9V at a rate determined by the charging resistors (1M Ω trimpots and associated resistors). The time taken for the capacitor to charge to two-thirds of the supply voltage regulates the length of the output pulse.

IC1 generates a pulse which governs the length of time in which a train can “legally” pass through the signals. IC2 provides a shorter pulse, used to divide this time between the green and amber lamps.

The lamp for the light beam could be an ordinary torch bulb; the type with the built in lens would be ideal. In my version, the bulb was a small 14V type with



Two 555 IC timers wired as monostables form the heart of the circuit. Lamps are miniature 12V types.

an aluminium foil reflector wrapped around it, and run off the main train transformer.

When setting up the controller, RV2 should be set for minimum resistance, then RV1 adjusted to give the required

length of the entire timing cycle (green AND amber times). After this, RV2 can be set to obtain the desired green:amber timing ratio.

D. Houlder,
Charnwood, ACT.